



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/625,669	07/24/2003	Nobuo Ishii	236664US2RE	8921
22850 7590 12/20/2007 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER CHEN, BRET P	
			ART UNIT 1792	PAPER NUMBER
			NOTIFICATION DATE 12/20/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/625,669

Applicant(s)

ISHII ET AL.

Examiner

B. Chen

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-16 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- ☐ Notice of Informal Patent Application
- ☐ Other: ____.

DETAILED ACTION

Claims 1-16 are pending in this application which is a REI of Serial Number 09/252,002 now US Patent 6265031, which is a DIV of 08/788636 now US Patent 5938883, which is CON of 08/180281 now abandoned.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 11-12, 14, 16 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In claim 11, the phrase “the pitch varying from an inner side to an outer side of the antenna” is deemed new matter as there appears to be no support for such a limitation in the original specification. The only recitation about the pitch appears to be in col.9 lines 47-59. The same issue applies to claim 14.

In claim 12 line 7, the term “cured shape” is deemed new matter. There is no recitation for such a limitation.

Art Unit: 1792

In claim 16, the phrase "a flat elongated surface contracted with the surface of the processing chamber" is deemed new matter. There appears to be no recitation for such a limitation in the original specification.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 12 line 7, the term "cured shape" is deemed vague and indefinite as to what said term means.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paranjpe (5,231,334). Paranjpe discloses a plasma source 12 for generating a plasma in a chamber in conjunction with a radio frequency generator (not shown) in which the plasma source is a spiral coil 14 and conducts the radio frequency wave from a radio frequency generator and induces a plasma in the chamber (col.2 lines 43-51). The conical coil can be used to increase

Art Unit: 1792

plasma uniformity (col.2 lines 67-68) and can be in two segments which allows for the reduction of the high voltage (col.2 lines 52-55) and can affect a wafer 26 (col.3 lines 57-62). It is noted that the impedance is calculated before selection (col.4 line 50 – col.5 line 41) and that a magnetic field can be present (col.3 lines 57-68).

With respect to high frequency power as claimed by the applicant, it is noted that high frequency can be RF (col.1 lines 20-22) and that the frequency can be 13.56 MHz (col.5 line 37). It is noted that Paranjpe teaches a frequency of 13.56 MHz (col.3 line 64). It is the examiner's position that the radio frequency of Paranjpe meets the claimed limitation of high frequency power.

With respect to positioning a substrate, it is noted that the reference clearly teaches of processing a substrate. It is the examiner's position that since the substrate is clearly located in the chamber, one skilled in the art practicing the invention would place the substrate in the chamber thus meeting the limitation of positioning the substrate.

However, the reference remains silent on supplying a high frequency power from a central area. It is noted that the reference clearly teaches the use of a high frequency power source. Figure 1 only disclose the secondary RF generator 24 but does not show where the primary RF generator is. It is the examiner's position that since Paranjpe does not disclose the position it is not critical to the practice of the invention. Hence, it would have been obvious to place the RF generator in the central area with the expectation of obtaining similar results and in the absence of a showing of criticality.

In claim 3, the applicant requires a controller. It is well known in the art to use a controller with the expectation of obtaining precise control of a manual activity once done by

Art Unit: 1792

hand. It would have been obvious to utilize a controller with the expectation of obtaining better control of the plasma process.

The limitations of claims 2, 4-6 have been addressed above.

In independent claim 12, the applicant requires a cured shape. It is well known in the art to utilize different shapes of the plasma coil to achieve different affects. Paranjpe specifically teaches of using a coil shape with the expressed purpose of achieving increased plasma uniformity. It would have been obvious to change the coil shape with the expressed purpose of obtaining the known advantages associated with a specific geometric configuration.

The limitations of claims 13-16 have been addressed above.

Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paranjpe (5,231,334) alone of when taken in view of Ogle (4,948,458). Paranjpe discloses a plasma source 12 for generating a plasma in a chamber in conjunction with a radio frequency generator (not shown) in which the plasma source is a spiral coil 14 and conducts the radio frequency wave from a radio frequency generator and induces a plasma in the chamber as noted above. However, the reference fails to teach a susceptor.

It is well known in the plasma processing art that a wafer or substrate rests on something. It is the examiner's position that the "something" can be considered a susceptor.

Regardless, Ogle (4,948,458) discloses a method of using a plasma to treat semiconductor wafers by using a radio frequency electric field (col.1 lines 7-20) in which the rf source is coupled to the coil (col.3 lines 22-23). The reference clearly teaches of placing the wafer W on a support surface 13 (col.5 lines 45-46 and Figure 2. It would have been obvious to

Art Unit: 1792

utilize the substrate support of Ogle in the process of Paranjpe with the expectation of obtaining similar results.

The limitations of claims 9-11 have been addressed above.

Allowable Subject Matter

Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bc
10/11/07



BRET CHEN
PRIMARY EXAMINER